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Clinical Planning for High-Risk Confined Space Rescue

Getting the casualty out is only part of the rescue.

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City & Guilds 6160-03 Working in High Risk Confined Spaces • 6160-04 Control Entry and Arrangements - High Risk

PLANNING QUESTION **If a casualty becomes critically ill at the furthest point in the space, what happens clinically until unrestricted prehospital care becomes possible?**

EXECUTIVE BRIEF

A confined-space rescue plan normally concentrates on safe access, atmosphere, respiratory protection, communications, retrieval and recovery. Those controls are essential, but they do not by themselves answer the clinical problem. In a high-risk space, the foreseeable casualty may be hypoxic, poisoned, trapped, bleeding, burned, exhausted or in cardiac arrest. The interval between collapse and meaningful clinical access may be prolonged even when an NHS ambulance reaches the site quickly.

Clinical planning therefore belongs inside the rescue plan. It should define the credible casualty, the care that can safely be delivered at the casualty, what must continue during extrication, and what capability will be waiting at the point of emergence. The answer should be proportionate to the risk; it is not a blanket argument for a paramedic at every entry.

01 | The legal starting point

The Confined Spaces Regulations 1997 require suitable and sufficient arrangements for rescue before work begins. HSE guidance is explicit that those arrangements must not depend on the public emergency services. Calling 999 remains appropriate, but the employer's immediate rescue capability must already exist and must reflect the space, the work, the likely emergency, the rescuers, communications, resuscitation equipment, first aid and the practical method of recovery.

IMPORTANT DISTINCTION **The rescue plan explains how the casualty will be reached and recovered safely. The clinical plan explains what may happen to that casualty, and what useful care is realistically deliverable while recovery takes place.**

02 | Specified risks become clinical problems

The Regulations define a confined space by reference to foreseeable specified risks. These include fire or explosion; loss of consciousness arising from increased body temperature; loss of consciousness or asphyxiation arising from gas, fumes, vapour or lack of oxygen; drowning caused by rising liquid; and asphyxiation caused by a free-flowing solid or entrapment that prevents access to a respirable environment.

Those are not only entry hazards. They describe potential casualty states. Oxygen deficiency or toxic exposure may produce confusion, collapse, seizures, respiratory arrest or cardiac arrest. Heat may cause progressive neurological impairment and circulatory failure. Fire or explosion may combine burns, blast injury, trauma and inhalational injury. Rising liquids and free-flowing solids introduce drowning, crushing and entrapment, while making access and ventilation more difficult.

The work itself may add falls, machinery injury, haemorrhage, fractures, head injury, hazardous energy and medical emergencies unrelated to the space. Planning should therefore begin with the credible patient, not with a catalogue of rescue equipment.

LEARNING FROM PRACTICE **HSE describes a crane compartment in which rusting depleted the oxygen. One worker collapsed; two would-be rescuers were also overcome, and two people died. The lesson is clinical as well as atmospheric: an unprotected rescue can multiply the casualty load before treatment begins. Source: HSE, Confined spaces - introduction.**

03 | The rescue timeline matters clinically

An ambulance response time is not the same as the time to clinical contact. A casualty may be twenty metres into a vessel, below ground, behind a restricted opening, dependent on respiratory protection, entangled in equipment or awaiting a complex haul. Public ambulance clinicians can be physically close to the incident while still being unable to reach the patient.

The plan should estimate the longest credible interval from incident to meaningful clinical access, then consider the likely rate of deterioration during that interval. A conscious casualty with an isolated limb injury presents a different time problem from an apnoeic casualty in an oxygen-deficient atmosphere. This is where rescue and clinical priorities must be discussed together rather than sequentially.

Three phases of care

At the casualty, the team should identify the limited interventions that are useful, safe and physically deliverable. Airway positioning, ventilation, control of catastrophic haemorrhage or an immediately indicated defibrillation attempt may be important, but access, atmosphere, competence and equipment determine whether they are possible.

During extrication, the plan should define what must continue while the casualty is packaged, moved, raised or lowered. It should anticipate loss of airway access, interruption of monitoring, deterioration in an awkward stretcher position and the effect of technical manoeuvres on treatment.

At emergence, unrestricted assessment and treatment should begin without an avoidable pause. The casualty-management area, oxygen, monitoring, resuscitation and haemorrhage-control equipment, medicines under suitable governance, shelter, vehicle access and NHS handover route should already have been identified.

PLANNING OUTCOME **Before entry, the team should know what can happen in each phase, who can do it, and which intervention must never compromise rescuer safety or the extraction system.**

04 | Why earlier paramedic contact may help

Where the risk assessment supports it, a confined-space-trained paramedic who is integrated with the rescue system may bring clinical decision-making closer to the patient. Earlier assessment can distinguish primary hypoxia or toxicity from trauma or a medical event; identify peri-arrest physiology; prioritise airway, ventilation and haemorrhage control; influence packaging and extraction; and prepare a more useful handover to the receiving NHS team.

The benefit is not simply the presence of more equipment. It is the ability to interpret a changing patient while technical decisions are being made. A casualty who is breathing but obtunded after atmospheric exposure may need the fastest safe removal from the hazard, whereas catastrophic haemorrhage may require a brief intervention before movement. A clinician can help the rescue supervisor understand the clinical consequence of each option.

That benefit is conditional. A paramedic must not enter solely because the patient is sick. Entry control, atmospheric monitoring, respiratory protection, communications and rescue competence remain mandatory. The clinician must be trained for the environment, equipped for the task and included in the site command structure. Their scope must also be honest: confined-space entry training is not automatically a rescue qualification, and it is not equivalent to NHS HART capability.

05 | Extraction is not automatically the first treatment

Removal from a causative atmosphere is often the most important intervention, and unnecessary treatment in the space can delay survival-critical extraction. Equally, 'get them out and treat afterwards' should not become an unexamined rule. Airway obstruction, respiratory arrest, catastrophic external haemorrhage and selected reversible causes of traumatic peri-arrest may require action before or during recovery if that action is safe, effective and does not undermine the rescue.

06 | Cardiac arrest and toxic exposure

Cardiac arrest exposes the limits of an unintegrated plan. Conventional resuscitation assumes access for compressions, ventilation, defibrillation and simultaneous team activity. A restricted opening, vertical route, respiratory protection or stretcher configuration may make one or more of these impossible. The plan should establish whether effective CPR can occur at the casualty, whether a defibrillator can be taken safely into the space, how ventilation will be provided, and at what point full advanced life support can realistically begin.

Toxic exposure creates a different tension: the impulse to reach a collapsed worker can create additional casualties. Clinical urgency does not cancel the entry risk assessment. The atmosphere, protective equipment and rescue system must permit access, and contamination considerations may affect treatment, equipment and handover. A clinician who becomes the second casualty cannot help the first.

LEARNING FROM INVESTIGATION **On Sava Lake, two crew members died from asphyxiation after an oxygen-deficient atmosphere migrated into a forecastle store through a damaged cargo-hold vent. The planning lesson is that atmosphere and casualty location cannot be treated as static: connected spaces, migration routes and changing conditions must inform monitoring, access and rescue. Source: MAIB Report 15/2008.**

07 | Onsite provision and NHS HART are not the same

Pre-positioned onsite rescue and clinical capability

An onsite rescue team is part of the employer's planned emergency arrangement. If a suitably trained paramedic is also pre-positioned and integrated into that arrangement, both resources can be briefed on the permit, hazards, entry control, communications, retrieval route, equipment and casualty-management area before work begins. Subject to competence, protection and the agreed entry plan, this may shorten the interval to clinical assessment and maintain continuity from first contact through extraction and handover.

This model still requires a competent rescue team. A paramedic does not replace rescuers, breathing apparatus, entry control or technical rescue capability. Nor does private onsite provision replace a 999 request, NHS ambulance transport or specialist NHS resources when they are needed.

HART as an NHS specialist response

Hazardous Area Response Teams are specialist NHS ambulance resources trained and equipped to provide paramedic care in hazardous environments, including confined spaces. They bring specialist PPE and equipment, hazardous-area clinical practice, interagency working and access to the wider NHS response. That capability is valuable once mobilised and able to enter under the incident command arrangements.

HART is nevertheless a responding resource, not the employer's pre-positioned rescue arrangement. Mobilisation, travel, rendezvous, briefing, hazard assessment and physical access all take time and are incident-dependent. The Confined Spaces Regulations and HSE guidance do not permit an organisation to treat HART, the fire and rescue service or any other public responder as its planned immediate rescue capability.

PRACTICAL DIFFERENCE **Onsite provision is designed around the known job and is already at the workface. HART is a specialist NHS response to the incident. Good planning may use both, but they occupy different places in the system.**

08 | What capability is proportionate?

Not every confined-space entry requires a paramedic, and enhanced provision must never become a substitute for prevention. The decision should follow the site-specific assessment. It becomes more relevant where there is a credible risk of major trauma, haemorrhage, hypoxia or toxic exposure; a prolonged or technically complex recovery; delayed NHS access; work at height or around hazardous energy; multiple casualties; a remote site; or first-aid provision that cannot address the foreseeable patient.

The useful commissioning question is not 'Does confined-space work require a paramedic?' It is: 'Does the foreseeable clinical risk exceed the capability already built into the rescue plan?' If it does, the additional capability should have defined competencies, equipment, medicines governance, indemnity, communications and command relationships.

09 | Plan, integrate and rehearse

A rescue exercise should test a sick casualty, not only the haul system. An unconscious patient, respiratory arrest, catastrophic haemorrhage, deterioration during extraction or a multiple-casualty scenario can reveal where clinical and technical plans collide. The exercise may show that airway access disappears after packaging, monitoring cannot continue through a restriction, equipment does not fit, communications fail or the ambulance rendezvous point is impractical.

Pre-entry clinical information

The clinical component of the rescue plan can include Compass Prehospital's Confined Space Operations - Pre-Entry Medical Information & Emergency Care Acknowledgement. Completed before entry, it records the operative's identity, emergency contact, medical conditions, medication, allergies, current symptoms and any carried inhalers, auto-injectors or medical-alert devices. This may identify conditions that alter the clinical risk assessment or make particular medical emergencies more foreseeable. If the casualty later cannot communicate, the information supports earlier decision-making and a more efficient, structured handover to NHS clinicians. The form supports the rescue plan; it is not an entry permit, medical fitness certificate, risk assessment or blanket consent.

SIX QUESTIONS BEFORE ENTRY

- What credible illness or injury could occur, including each relevant specified risk?
- How long could meaningful clinical access and subsequent extraction realistically take?
- Which interventions are useful, safe and deliverable at the casualty?
- What care must continue during packaging and movement, and where could it be interrupted?
- What people, equipment and onward-care arrangements will be waiting at emergence?
- Has the complete system been tested with a clinically realistic casualty?

10 | What Compass Prehospital can provide

Compass Prehospital can supply a confined-space-trained paramedic to support organisations, contractors and individuals undertaking higher-risk work. The service can be integrated with the client's established rescue provider, permit system, entry control, command and clinical governance arrangements. Its purpose is to place proportionate paramedic assessment and treatment capability closer to the foreseeable casualty, while respecting the authority and safety controls of the technical rescue team.

The engagement should be designed around the actual operation. That may include pre-start clinical review, participation in rescue planning and exercises, agreed in-space or entry-point capability where safe and competent, preparation of the casualty-management area, and structured handover to NHS ambulance services. Compass Prehospital does not replace the statutory rescue arrangement or present private provision as an alternative to emergency-service activation.

COMMISSIONING PRINCIPLE **Specify the clinical problem first. Then select the competence, equipment and governance needed to manage it within the real rescue timeline.**

ABOUT THE AUTHOR

Phil Baker is a BSc-qualified, HCPC-registered paramedic and co-founder of Compass Prehospital. He holds the City & Guilds Level 2 Award in Working in High Risk Confined Spaces (6160-03) and Level 3 Award in Control Entry and Arrangements for Confined Spaces — High Risk (6160-04). He has multidisciplinary search and rescue experience with HM Coastguard. These qualifications inform the operational perspective of this briefing; they are not presented as City & Guilds confined-space rescue and recovery awards or as NHS HART accreditation.

EVIDENCE AND GUIDANCE

1. Confined Spaces Regulations 1997 (SI 1997/1713), particularly regulations 1, 4 and 5.
2. HSE. Safe work in confined spaces: Approved Code of Practice and guidance (L101).
3. HSE. Confined spaces: A brief guide to working safely (INDG258).
4. HSE. Confined spaces: introduction and specified risks. hse.gov.uk/confinedspace/introduction.htm
5. City & Guilds. Confined Spaces qualifications (6160), including 6160-03 and 6160-04.
6. NHS England. Core standards for emergency preparedness, resilience and response.
7. East of England Ambulance Service NHS Trust. Hazardous Area Response Team.
8. South Western Ambulance Service NHS Foundation Trust. Hazardous Area Response Team.
9. Resuscitation Council UK. Resuscitation Guidelines 2025: Special Circumstances; First Aid.
10. HSE. Confined spaces: introduction - crane compartment incident example.
11. Marine Accident Investigation Branch. Sava Lake, Report 15/2008.

This briefing is general guidance and should be read alongside site-specific risk assessments, rescue plans, organisational procedures and current professional guidance. Review annually or following material regulatory, clinical or operational change.

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